



## From the Editors

Welcome to the August edition of *The Giovanni News*. This month's research highlight will introduce a journal paper on how Giovanni data products can be used for investigations addressing public health concerns. Two GES DISC staff members will be presenting a workshop on this very topic in late August.

This issue's Giovanni image was an experiment. Minimum sea ice extent in the Arctic Ocean usually occurs in late August or early September. As a result, the Modern Era Retrospective-analysis for Research and Applications (MERRA) data set was used to look at fractional sea ice cover in a portion of the Arctic Ocean for the period of the data set, which runs from January 1979 to present. Suffice it to say, it appears that the experiment worked! Read on to see how.

Finally, seventeen publications utilized Giovanni in July – that's impressive! Beginning this month, we will share all Giovanni-related news articles with *The Giovanni News* mailing list for your reading pleasure.

Regards,  
Jim Acker and Wainie Youn,  
*The Giovanni News* Editors

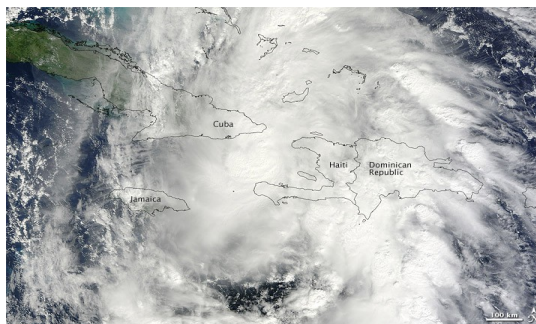
**NASA Giovanni**  
**Relevant;**  
**Real;**  
**& right now**

## July Research Highlight: The dry season in Haiti: a window of opportunity to eliminate cholera

Published in PLoS Currents: Outbreaks

**Citation:** Rebaudet, S., Gazin, P., Barraix, R., Moore, S., Rossignol, E., Barthelemy, N., Gaudart, J., Boncy, J., Magloire, R., and Piarroux, R. *The Dry Season in Haiti: a Window of Opportunity to Eliminate Cholera*. *PLOS Currents: Outbreaks*. 2013 Jun 10 [last modified: 2013 Jul 24]. Edition 1.  
doi:10.1371/currents.outbreaks.2193a0ec4401d9526203af12e5024ddc.

**Summary:** The authors of this study examined the ongoing cholera epidemic in Haiti, which is currently responsible for a large fraction of the deaths attributed to cholera globally. Giovanni was used to acquire Tropical Rainfall Measuring Mission (TRMM) Multi-Satellite Precipitation Analysis – Real Time (TMPA-RT) data, which was plotted for the period January 2010-January 2013 along with the daily number of suspected cholera cases. A strong relationship between rainfall and cholera incidence is apparent from this plot. The authors then investigated where cholera cases were predominantly reported during the subsequent dry season of February and March 2013. Most of the cases described were reported in urban (rather than rural) locations in which water quality and human waste treatment was clearly deficient. Based on this examination, the authors concluded that cholera was not persistent in the Haitian environment, but rather remained active in a human reservoir population, with contamination occurring to water supplies during the rainy seasons. During the dry season, the primary actions advocated to reduce cholera cases, and potentially eliminate cholera, were rapid identification of actual cases followed by repairs to the water distribution system in the affected communities and the use of water treatment products.



*Hurricane Tomas, shown above between Cuba and Haiti on November 5, 2010, was the first tropical storm system to directly affect the impoverished island nation since the devastating earthquake of January 2010. The cholera outbreak commencing in October 2010 peaked soon after the passage of Tomas and the heavy rainfall associated with the storm.*

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# Giovanni Image of the Month

## Time-Series of Fraction of Sea-Ice Cover in the Beaufort Sea

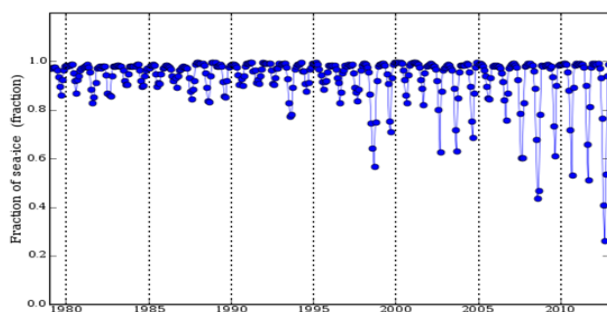
**CONTEXT:** The extent of the Arctic Ocean area covered by sea ice in the summer has been declining for the past several years, apparently caused by the observed warming trend in the Arctic region. This decline has been illustrated several different ways. The Modern Era Retrospective-analysis for Research and Applications (MERRA) data set includes a *Fraction of Sea-Ice* data parameter. Giovanni was used to generate an area-averaged time-series of the *Fraction of Sea-Ice* data parameter for a sub-region of the Arctic Ocean, the Beaufort Sea, in which the summer sea ice decline has been evident.

**METHOD:** A region of the Beaufort Sea, shown in the image below, was selected for the generation of this time-series. The *Fraction of Sea-Ice* data parameter is found in the MERRA Monthly History Data Collections (2D) data portal. The time-series was generated for the period January 1979-December 2012. After the first time-series was generated, the Y-axis was modified to a range of 0 to 1.2 *Fraction of Sea-Ice* to make the plot easier to view.



**RESULT:** The time-series plot, shown below, clearly shows the decline in summer sea ice extent in the Beaufort Sea beginning in the 1990s, following the prior period of relative stability. The acceleration of this trend in the following decade is quite apparent, with a minimum value of the data parameter in the study region approaching 0.2 (i.e., 20%) in the summer of 2012.

Area-Averaged Time Series (MATMNXFLX.5.2.0)  
(Region: 157W-126W, 72N-83N)



Area-averaged time-series of fractional sea ice cover (*Fraction of Sea-Ice*) in the study region located in the Beaufort Sea for the period January 1979-December 2012. The area covered by sea ice in the region is seen to be progressively decreasing during the summer months, with the summer reduction in sea ice cover commencing in the late 1990s.

## Giovanni-4 Development Update

Here are some of the highlights from the recent release of Giovanni 4.3. To get more information beyond this short summary, click [here](#).

→ 3 variables from a new data product, the Goddard Satellite-Based Surface Turbulent Fluxes, Monthly Grid (GSSTFM), which is described in this PDF [document](#). The three new variables are:

- Latent Heat Flux
- Sensible Heat Flux, and
- Wind Stress Magnitude

→ A new service, **Time-averaged Scatter Plot**. This interactive service shows the scatter of two time-paired, and then time-averaged, variables.

→ *Improved reliability*: Data Searching has been 'chunked' into smaller time intervals, to ensure that searches for data over long time periods are successful.

→ Very soon, 9 NLDAS variables will be added to Giovanni-4:

- Precipitation Hourly Total
- Evapotranspiration
- Surface runoff (non-infiltrating), and
- 6 soil moisture variables at various depths